



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/694,216

10/28/2003

Michael Patrick Harmon

08350.3198

3004

22852

7590

04/17/2006

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP

901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER

RIDDLE, KYLE M

ART UNIT

PAPER NUMBER

3748

DATE MAILED: 04/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

e

Office Action Summary	Application No. 10/694,216	Applicant(s) HARMON, MICHAEL PATRICK	
	Examiner Kyle M. Riddle	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2006.
- 2a) ☐ This action is **FINAL**.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 13-22 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 13-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The arguments presented in applicant's amendment received 29 March 2006 were deemed persuasive, however, a new non-final rejection is set forth below.

Claim Objections

2. Claim 8 recites the limitation "a second impact absorbing device" in page 3, claim 8, lines 1-2 of the claim. There is insufficient antecedent basis for this limitation in the claim as there is no mention of a first impact absorbing device in claim 8 or claim 1, from which claim 8 depends.

3. Applicant's remarks on page 7, middle of the page, indicate that the interpretation of the limitation "second impact absorbing device" is reasonably ascertainable. The examiner maintains the position that rewording the claim to avoid confusion is also reasonable and respectfully requests an amended claim 8 to clarify the limitation.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3-5, 7, 8, 13-16, 18-20, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Luria (U.S. Patent 4,084,557).

Re claims 1, 4, 5, 13, 16, 19, and 20, Luria discloses a valve actuation mechanism comprising:

- a block or cylinder head 2 with main cylinder 3 and piston 4 defining a combustion chamber (column 3, lines 41-43; Figure 1);

- a crankshaft (Figure 1);

- an engine valve or intake valve 8 moveable between a first position at which the valve prevents the flow of fluid relative to the combustion chamber or closed position and a second position at which the fluid flows relative to the combustion chamber or open position (column 3, lines 44-46, lines 66-68 with column 4, lines 1-6, lines 13-16; Figures 4a-5c);

- a cam follower or rocker arm 20 having a fixed central pivot 80 operatively connected to the intake valve 8 (column 3, lines 45-50, column 5, lines 14-16; Figures 1, 4a-5c);

- a first cam 12 engaging rocker arm 20 at a first end through pushrod 18 to rotate rocker arm 20 in a first direction about the pivot 80 to open intake valve 8 during a first lift period (column 3, lines 45-50; Figures 1, 4a-5c);

- a second cam 34 engaging rocker arm 20 at a second end to rotate rocker arm 20 in a second direction about the pivot opposite the first direction to open intake valve 8 during a second lift period (column 6, lines 15-34; Figures 1, 4a-5c);

- a phase shifting means including worm 60 and gears 52, 54, 56 to adjust the timing of the second cam 34 relative to the first cam 12 between the first lift period and the second lift period (column 4, lines 32-50; Figures 1, 2, 4a-5c);

- the second cam 34 selectively engaging and disengaging the rocker arm 20 (column 5, lines 47-68 with column 6, lines 1-34; Figures 1, 4a-5c).

Re claims 3 and 18, Luria discloses the second lift period overlapping with at least a portion of the first lift period (column 6, lines 8-34; Figures 5a-5c).

Re claims 7, 8, 14, 15, and 22, Luria discloses a first impact absorbing device or follower 16 between first cam 12 and rocker arm 20 (column 3, lines 46-50, column 5, lines 15-18; Figures 1, 4a-5c) and a second impact absorbing device or interposer 90 between second cam 34' and rocker arm 20' (column 6, lines 49-63; Figure 6).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luria in view of Hara et al. (U.S. Patent 4,708,101).

Luria discloses a valve actuation mechanism comprising a block or cylinder head with main cylinder and piston defining a combustion chamber, a crankshaft, an engine valve or intake valve moveable between a first position at which the valve prevents the flow of fluid relative to the combustion chamber or closed position and a second position at which the fluid flows relative to the combustion chamber or open position, a cam follower or rocker arm having a fixed central pivot operatively connected to the intake valve, a first cam engaging rocker arm at a first end through pushrod to rotate rocker arm in a first direction about the pivot to open intake valve during a first lift period, a second cam engaging rocker arm at a second end to rotate rocker arm in a second direction about the pivot opposite the first direction to open intake valve during a second lift period, a phase shifting means to adjust the timing of the second cam relative to the first cam between the first lift period and the second lift period, the second cam selectively

engaging and disengaging the rocker arm. Luria, however, fails to specifically disclose the phase shifting mechanism including a helical spline and a hydraulic actuator.

Hara et al. teach an engine valve 12 operatively moveable between an open and closed position, a cam follower 15 operatively connected to the engine valve 12, a first cam 13 adapted to engage the cam follower 15 to actuate the engine valve 12 during first lift period (column 6, lines 24-68 with column 7, lines 1-39; Figures 8A, 12, and 13), a second cam 17 adapted to engage the cam follower to actuate the movement of the engine valve 12 during a second lift period (column 6, lines 24-68 with column 7, lines 1-39; Figures 8A, 12, and 13), a phase shifting device 23 operatively connected to the first cam 13 and adapted to adjust the relative timing between the first lift period and the second lift period (column 4, lines 65-68 with column 5, lines 1-16; Figure 8B), the phase control mechanism 23 including a helical spline and a hydraulic actuator (column 4, lines 65-68 with column 5, lines 1-31; Figures 9 and 10). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Hara et al. in the valve actuating mechanism of Luria, since the use thereof would replace the worm gear phase adjusting mechanism with a more versatile, hydraulically controlled mechanism to enable more accurate phase changing with wider variations in timing and lift control.

8. Claims 6 and 21 are rejected under 35 U.S.C. 103(a) as being obvious over Luria.

Luria discloses the valve actuating mechanism cited above, however, fails to specifically disclose an additional rocker arm or cam follower with a pushrod. Luria discloses the use of a pushrod 18, and the addition of a rocker and another pushrod connected to the disclosed rocker arm 20 would be obvious and well within one of ordinary skill depending on space and location

considerations, rotational forces, and the overall size of the engine. Moreover, there is nothing in the record which establishes that the application of such an addition rocker arm and pushrod represents a novel or unexpected result (See *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975)).

Response to Arguments

9. Applicant's arguments with respect to claims 1-8, 13-22 have been considered but are moot in view of the new ground(s) of rejection.

10. Regarding applicant's arguments on the bottom of page 10 and top of page 11 with reference to claim 13 concerning the first and second cams rotating the rocker arm in opposite directions, the examiner disagrees. As clearly shown in Figures 4a-5c of Luria, first cam 12 pushes rocker 20 in an upwards direction about pivot 80 while second cam 34 pushes rocker 20 in a downwards direction about pivot 80, the directions being opposite even though both are clockwise around the pivot 80. Conversely, applicant's Figure 1 shows a follower or rocker 50 and a first cam 42 which pushes follower 50 in a generally upwards direction about pivot 59 while the second cam 52 pushes the follower 50 in a generally downwards direction about pivot 59, again both directions being clockwise about the pivot 59. This is exactly the same as Luria.

Communication

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyle M. Riddle whose telephone number is (571) 272-4864. The examiner can normally be reached on M-F (07:30-5:00) Second Friday Off.

Art Unit: 3748

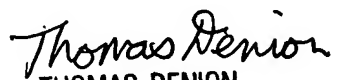
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kyle M. Riddle
Examiner
Art Unit 3748

kmr



THOMAS DENION
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700